

We claim:

1. A method for using surface and curve functions and positions in a CAD model to define the geometry of a shape to allow the transformation of the shape with an arbitrary function, said method comprising the steps of:
  - 5 a. Obtaining a solid model containing one or more faces, edges and/or vertices, where the underlying geometry of each face, edge or vertex may be represented, respectively by a surface, curve, or position, and each surface or curve may be represented by a function mapping from a domain space into 3-dimensional space;
  - 10 b. Defining a transformation function mapping from 3-dimensional space to 3-dimensional space;
  - 15 c. Creating new surface and curve functions by performing function composition with each of the existing surface and curve functions with the transformation function;
  - 20 d. Creating new, surfaces and curves by taking each point in the domain of each of the original surface and curve functions and passing the point through the corresponding new function, and creating new positions by passing each original position through the transformation function; and
  - 25 e. Resetting the geometry of the CAD model.

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